

U.S. Patent Application Serial No. 10/537,911

Response filed June 25, 2009

Reply to OA dated March 31, 2009

REMARKS

Claims 1, 2 and 4-30 are pending in this application. No amendment is made in this Response. It is believed that this Response is fully responsive to the Office Action dated March 31, 2009.

Claims 2 and 5-7 are rejected under 35 U.S.C. §102(b) as being anticipated by JP 4-108004 (IDS cited reference). (Office action page 2)

The rejection of claims 2 and 5-7 is respectfully traversed, and reconsideration is requested.

The Examiner states that reference numeral 2 of JP '004 is the "pair of heat conductors," and reference numeral 11 of the reference is the "arcuate portions." The Examiner now cites reference numeral 1 of the reference as the "heater" and reference numeral 5 of the reference as the "cap," stating that the heater (1) fixed to a terminal inside of a cap (5) is contained inside a rod having an opening at one end so as to seal the opening with the cap.

In traversing the rejection, Applicant submits that the conductors of JP '004 do **not** meet the limitation "formed of a plate-like member and arcuate portions bent from both ends of the plate-like member."

Specifically, the Examiner states with respect to JP 4-108004, as follows:

"JP '004 discloses a hair curler (figs. 1-4) comprising the essential claimed invention such as having a heating element with a pair of heat conductors (2), wherein the heat conductors forming a plate like member and having arcuate portions (at 11) bent from both ends of the plate like member (applicant is noted that the heat conductors having arcuate portions from both ends at 11 as claimed), a heater (1) fixed to

U.S. Patent Application Serial No. 10/537,911

Response filed June 25, 2009

Reply to OA dated March 31, 2009

terminal inside of a cap (5) is contained inside a rod having an opening (see fig. 1) at one end so as to seal the opening with cap."

However, the Examiner's understanding of JP '004 is not correct.

In the present invention, the heat conductors 12 comprise "a pair of heat conductors formed of a plate-like member 12b and arcuate portions 16 bent from both ends of the plate-like member 12b," as clearly illustrated in FIG. 4 (a), (b) of the present application.

In contrast, in JP '004, the metal heat conductors 2 comprise a pair of heat conductors formed of a rectangular surface 10 (plate-like member) and a (**semi-)cylindrical portion 11 (arcuate portion)** bent from **one end of the rectangular surface 10 (plate-like member)**, as clearly illustrated in FIG. 2 of JP '004.

To clearly illustrate this difference and the effect resulting from this difference, the heat conductors of the present invention and the metal heat conductors of JP '004 are shown below in FIG. A and FIG. B, respectively. FIG. A shows a cross-section of the present invention that is illustrated in FIGs. 4(A) and (B) of the present specification.

U.S. Patent Application Serial No. 10/537,911
Response filed June 25, 2009
Reply to OA dated March 31, 2009

FIG. A (Present invention)

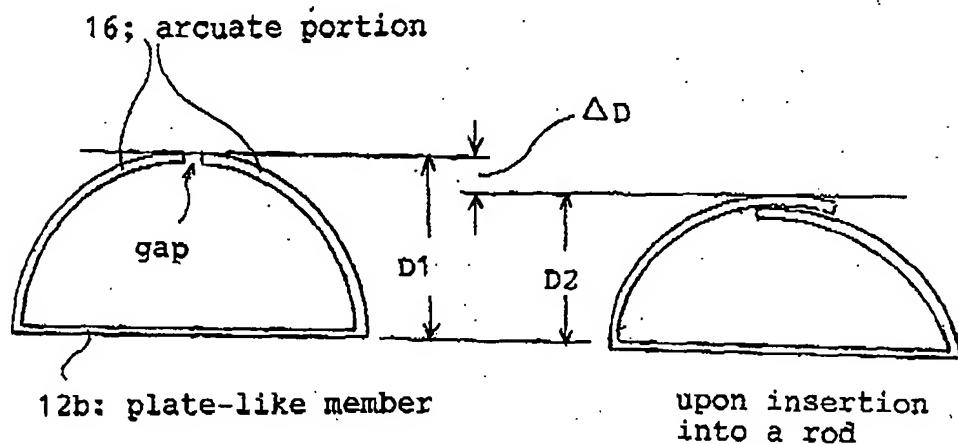
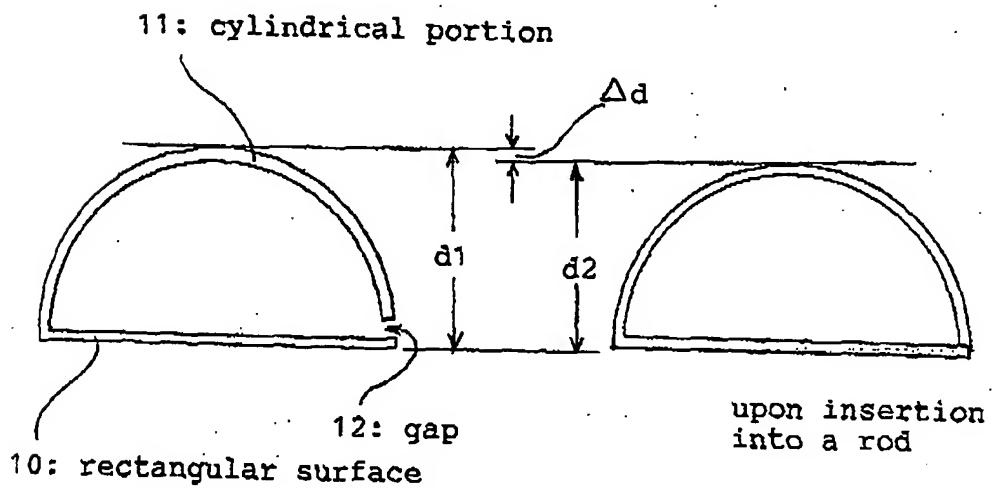


FIG. B (JP '004)



In the present invention, as illustrated in FIG. A, the heat conductors 12 are formed of a plate-like member 12b and arcuate portions 16 from both ends of the plate-like member 12b. The result of this structure is that the transformation of the heat conductors 12 is not limited to a gap in a central

U.S. Patent Application Serial No. 10/537,911
Response filed June 25, 2009
Reply to OA dated March 31, 2009

end portions between the arcuate portions 16, but further possible by overlapping of the central end portions.

By this large transformation, first, the heating element 13 including a pair of the heat conductors 12 is narrowed so that those are inserted more easily into a rod 15. In FIG. A, ΔD ($D_1 - D_2$) is large. (After insertion, their transformed shape returns by their elastic restoration force to the original shape before insertion in the rod 15.)

Second, since it is possible to insert the heating element 13 easily by utilizing large transformation of the heat conductors 12, the radius of the arcuate portions 16 can be made greater so as to closely contact the arcuate portions 16 with the inside of the rod 15, which results in an increase in heat transfer efficiency.

In summary, the heat conductors 12 formed of a plate-like member 12b and arcuate portions 16 from both ends of the plate-like member 12b not only makes it easy to insert inside of the rod 15 the heating element 13 including the heat conductors 12, but also enhances heat transfer efficiency from the heating element 13 to the rod 15.

In contrast, in JP '004, as illustrated in FIG. B, between the cylindrical portion 11 and the rectangular surface 10, a gap 12 is formed. This structure results in the following effect. The transformation of the cylindrical portion 11 is limited to a distance of the gap 12 and consequently the metal heat conductors 2 do not narrow so much, and thus it is not easy to cover with the inside covers 5 and 6 as shown by FIG. 3 of JP '004. In FIG. B, Δd ($d_1 - d_2$) is small. (In this case as well, their transformed shape returns to the original shape before insertion, but their restoration is small.)

U.S. Patent Application Serial No. 10/537,911

Response filed June 25, 2009

Reply to OA dated March 31, 2009

In order to cover with the inside covers 5 and 6 more easily, the radius of the cylindrical portions 11 must, in advance, be made smaller. However, as the radius of the cylindrical portions 1.1 become smaller, a distance between the cylindrical portions 11 and the inner surface of the outside case 7 becomes larger to result in a decrease in heat transfer efficiency (See FIG. 4 of JP '004).

That is, the "bent from both ends" structure recited in the present claims is clearly not disclosed in JP '004. Moreover, this structural limitation results in a difference in function between the present invention and JP '004, and it is clear that there is no suggestion in JP '004 for the structure of the present claims. Claims 2 and 5-7 are not anticipated by JP 4-108004, and further, are not obvious over this reference.

Claims 1, 17 and 19-21 are rejected under 35 U.S.C. §103(a) as being unpatentable over JP '004 in view of Carter (USP 4,242,567). (Office action page 3)

The rejection of claims 1, 17 and 19-21 is respectfully traversed, and reconsideration is requested.

The Examiner states that JP '004 discloses the invention of claim 1 except for the heating element having a support plate with an opening. The Examiner cites Carter for disclosing a heating element in Fig. 2 having a support plate (34) with openings (38), with heaters (40) fitted inside each of the openings. The Examiner states that it would have been obvious to modify the support plate (10) of JP '004 into the heating element of Carter.

However, as noted above, JP '004 does not disclose or suggest the limitation of claim 1 of

U.S. Patent Application Serial No. 10/537,911
Response filed June 25, 2009
Reply to OA dated March 31, 2009

a "pair of heat conductors formed of a plate-like member and arcuate portions bent from both ends of the plate-like member."

Applicant submits that Carter also does not disclose any heat conductors meeting this limitation, and no combination of Carter and JP '004 can provide this limitation.

Moreover, Carter's hair straightener has a fairly flat heater structure, and Applicant submits that it is unclear how the Carter and JP '004 references can be combined.

Claims 1, 17 and 19-21 are therefore not obvious over JP '004 and Carter (USP 4,242,567), taken separately or in combination.

[Claim] 4 is rejected under 35 U.S.C. §103(a) as being unpatentable over JP '004 in view of JP 4-103803 (IDS cited reference). (Office action page 3)

The rejection of claim is respectfully traversed, and reconsideration is requested.

The Examiner states that JP '004 discloses the invention "except for a portion of the heat conductor in contact with the heater is formed into a projecting surface." The Examiner states that JP '803 discloses such a projecting surface in Fig. 1, and that it would have been obvious "to construct the projecting surface as taught by JP 803 into the hair curler of JP '004 for the intended use purpose."

However, as argued above, JP '004 does not disclose or suggest the limitation of "heat conductors formed of a plate-like member and arcuate portions bent from both ends of the plate-like member." JP '083 also does not disclose or suggest this limitation. Claim 4 is therefore not obvious over JP '004 and JP '083, taken separately or in combination.

U.S. Patent Application Serial No. 10/537,911

Response filed June 25, 2009

Reply to OA dated March 31, 2009

Claim 18 is rejected under 35 U.S.C. §103(a) as being unpatentable over JP '004 in view of Carter and further in view of JP 4-103803 (IDS cited reference). (Office action page 3)

The rejection of claim 18 is respectfully traversed, and reconsideration is requested.

As discussed above, none of the JP '004, Carter and JP '803 references discloses or suggests the limitation of a "pair of heat conductors formed of a plate-like member and arcuate portions bent from both ends of the plate-like member" of the present claims. Claim 18 is not obvious over these references, taken separately or in combination.

Claims 8-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over JP '004 in view of JP 9-23920 (IDS cited reference). (Office action page 4)

The rejection of claims 8-10 is respectfully traversed, and reconsideration is requested.

Applicant submits, as argued previously, that neither JP '004 nor JP '920 discloses the heat conductor structure of claim 2, that is, a "pair of heat conductors formed of a plate-like member and arcuate portions bent from both ends of the plate-like member."

Applicant notes that the Examiner considers this difference in the shape of the rod between the present invention and the references to be merely a "change in shape of the non critical component," citing the specification at page 4, lines 2-5, and citing *In re Rose*. In response, Applicant submits that the specification (in particular at page 4, lines 2-5) does not state that the shape of the rod is "non critical"; these are entirely the Examiner's words. Applicant believes that the Examiner's reference to the specification of the application is inappropriate in this rejection.

U.S. Patent Application Serial No. 10/537,911
Response filed June 25, 2009
Reply to OA dated March 31, 2009

The Examiner may be arguing that the proposed modification of the reference represents a "mere change in shape," that is, the proposed modification would be non-critical **in the cited reference.**

However, Applicant submits that the Examiner is proposing a major modification of the reference, and if the "rod" (i.e., hair curler 1) in JP '920 were modified as proposed, there would undoubtedly be a change in function. Again, there is no suggestion in the references for such a modification.

Claims 8-10 are therefore not obvious over JP '004 and JP '920, taken separately or in combination.

Claims 22-24 are rejected under 35 U.S.C. §103(a) as being unpatentable over JP '004 in view of Carter and further in view of JP 9-23920 (IDS cited reference). (Office action page 5)

The rejection of claims 22-24 is respectfully traversed, and reconsideration is requested.

As argued above, none of JP '004, Carter and JP '920 discloses or suggests the heat conductor structure of claim 1, that is, a "pair of heat conductors formed of a plate-like member and arcuate portions bent from both ends of the plate-like member." In addition, as discussed above, the Examiner's arguments regarding modification of the shape of the "rod" in JP '920 do not represent a proper suggestion or motivation for such a modification.

Claims 22-24 are therefore not obvious over JP '004, Carter and JP '920, taken separately or in combination.

U.S. Patent Application Serial No. 10/537,911
Response filed June 25, 2009
Reply to OA dated March 31, 2009

Claims 11 and 12 are rejected under 35 U.S.C. §103(a) as being unpatentable over JP '004 in view of JP 3-045250 (IDS cited reference). (Office action page 5)

The rejection is respectfully traversed, and reconsideration is requested.

As argued above, JP '004 does not disclose or suggest the heat conductor structure of claim 2. JP '250 also does not disclose or suggest this structure. Claims 11 and 12 are not obvious over JP '004 and JP '250, taken separately or in combination.

Claims 25 and 26 are rejected under 35 U.S.C. §103(a) as being unpatentable over JP '004 in view of Carter and further in view of JP 3-045250 (IDS cited reference). (Office action page 6)

The rejection of claims 25 and 26 is respectfully traversed, and reconsideration is requested.

As argued above, none of JP '004, Carter and JP '250 discloses or suggests the heat conductor structure of claim 1. Claims 25 and 26 are not obvious over these references, taken separately or in combination.

Claims 13-16 are rejected under 35 U.S.C. §103(a) as being unpatentable over JP '004 in view of JP 2-798374 (IDS cited reference). (Office action page 6)

The rejection of claims 13-16 is respectfully traversed, and reconsideration is requested.

As argued above, JP '004 does not disclose or suggest the structural limitations of base claim 2. JP '374 also does not disclose or suggest the limitation of "a pair of heat conductors formed of a plate-like member and arcuate portions bent from both ends of the plate-like member."

U.S. Patent Application Serial No. 10/537,911
Response filed June 25, 2009
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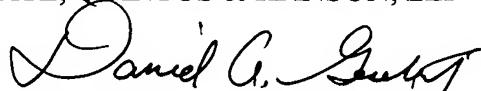
Claims 13-16 are not obvious over JP '004 and JP '374, taken separately or in combination.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the applicant's undersigned agent at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, the applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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